

Please r place the paragraph on page 14, beginning at line 16, with the following rewritten paragraph:

Q4  
However, here, to replace the final quadrupole Q3 and detector 20, there is provided a time-of-flight (TOF) mass analyzer 42. In known manner, the TOF analyzer of section 42 includes a gating region 44 and a detector 46. Thus, in use, ions pass into the gating region 44 and are gated or pulsed out to travel down the main body of the TOF 42, following a drift tube, until detected at a detector 46.

In the Claims:

Please amend claim 1 as follows:

- Sub B  
Q5
1. (Amended) A method of analyzing a substance, the method comprising:
- (1) creating a stream of ions in said substance;
  - (2) supplying the stream of ions and a collision gas to a multipole and providing an RF signal to the multipole, whereby the multipole functions as a collision cell;
  - (3) fragmenting said ions in the RF multipole by collisions with the gas molecules, in order to form primary fragment ions;
  - (4) supplying additional alternating current to the multipole at a frequency selected to cause resonance excitation of a desired primary fragment ion mass-to-charge ratio, whereby ions with said desired primary fragment ion mass-to-charge ratio are excited and undergo collisions with the gas molecules causing production of secondary fragment ions;
  - (5) modulating the alternating current signal applied in step (4) whereby periods in which said alternating current signal is applied alternate with periods in which the alternating signal is not applied;
  - (6) detecting the ion signal after fragmentation with a mass spectrometer and collecting one set of data for one spectrum, representative of the ion spectrum when the alternating current signal is applied and another set of data for another

B1  
and  
A3

spectrum, representative of the ion spectrum when the alternating current signal is not applied;

whereby said other spectrum can be subtracted from said one spectrum, to generate a subtracted spectrum showing the secondary fragment ions without the presence of the primary fragment ions except for any said primary fragment ions which are generated by step (4).

Please amend Claim 10 as follows:

A6

10. (Amended) A method as claimed in any one of claims 1, 2, 3, 4, or 8, which includes subtracting said one spectrum from the other spectrum to obtain a subtracted spectrum.

Please amend Claim 14 as follows:

A7  
SUB2

14 (Amended) An apparatus, for analyzing a substance by resonance excitation of selected ions and selective collision-induced dissociation, the apparatus comprising:

- an ion source for generating a stream of ions;
- a collision cell, including a quadrupole rod set, for receiving a stream of precursor ions and provided with a collision gas, for collision-induced dissociation between the parent ions and the buffer gas;
- a power supply connected to the quadrupole rod set for generating an RF field in the quadrupole rod set for guiding ions and for applying an additional alternating current field at a frequency selected to excite a desired ion;
- a modulation means connected to the power supply, for modulating the alternating current signal, whereby periods in which said alternating current signal are applied alternate with periods in which the alternating current signal is not applied.

[ Please amend Claim 15 as follows: ]

- cont  
a7
15. (Amended) An apparatus as claimed in claim 14, which additionally includes a detector for detecting fragment ions exiting the collision cell, a switch connected to the detector, two data storage devices connected to the switch, and a connection between the modulation control unit and the switch, whereby the switch switches detected data for periods when the alternating current signal is applied to one data storage device and collected data for periods when the alternating current signal is not applied to the other storage device.
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Please add the following new claim:

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- a8
20. (New) A method as claimed in claim 9, which includes subtracting said one spectrum from the other spectrum to obtain a subtracted spectrum.
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